Floodplain Habitats for Key Species: Character, Extent, and Opportunities

#0031

Technical Panel Review

Proposal Name: Floodplain Habitats for Key Species: Character, Extent, and Opportunities

Applicant Organization: Natural Heritage Institute

Principal Lead Investigator(s):
Cain, John

Amount Requested: $587,207

TSP Panel Summary of Findings:

This is a multi-disciplinary and collaborative proposal, combining the efforts of the Natural Heritage Institute, PWA, and Peter Moyle's group at UCD. This is an admirable team that has been assembled and one that is well-qualified. The objectives of the study are of high relevance to CALFED program priorities. One valuable component of the proposal concerns the proposed work by PWA to develop a hydrological model, one that is spatially explicit and can indicate conditions (including inundation) suitable for key species. Unfortunately the description of the hydrological model is not sufficient. Furthermore, the exact substance of the fish component of this study, what work will be done, is not clear. There is much reference to previous work by Jeff Opperman (in particular, a White Paper) and that the proposed project will draw on that, but it is not clear what exactly will be new, with respect to data collection, analysis, or modeling. Also, Jeff Opperman's CV was not included in the proposal. Task 2, "Define Biologically Effective Flood Regimes…" is not clearly described. For example they state, "In essence, this task will translate conceptual models into parameters that are useful to the restoration and water management community," but we are not told how this will be accomplished. Much work has already been done to "define parameters" and "identify key species". So what exactly will be new here? This task relies on the already developed white paper and expert opinion, but it is not clear what kind of quantitative analysis will be carried out. Furthermore, the investigators focus on the amount of habitat that may be created, but do not consider the quality

of that habitat.

The panel also felt that the expected budget for this project was excessive for the work performed. They also expressed concerns about the use of a proprietary model. There was a strong recommendation that projects implemented with public money should ultimately be publicly–available. However, the results of this project would be the only part that's available to the public, not the model itself. The panel suggested that open source leaves a better public legacy, and broadens the project's future value.

Relevance to PSP Topic Areas:

High

TSP Technical Rating:
Sufficient

TSP Funding Recommendation:
Do Not Fund

TSP Amount Recommended: $**0**

Conditions:

External Technical Review #1

Proposal Title: Floodplain Habitats for Key Species: Character, Extent, and Opportunities

Proposal Number: 0031

Proposal Applicant: Natural Heritage Institute

Purpose

Comments	**The proposed project seeks to synthesize existing information on floodplain habitats and key Delta species in an effort to develop restoration plans. The study appears to be a logical next step in a series of projects that have addressed the building blocks of the proposed work. The authors aim to develop pragmatic ideas for increasing the amount of hydrologically-connected floodplains in the Central Valley. As an added twist, the authors have proposed to examine climate change scenarios and their potential effects on floodplain functions.**
Rating	**Superior**

Background

Comments	**The conceptual model is clearly articulated and thoroughly documented. The study area graphics included in the proposal were of poor quality in the version I reviewed, which made it difficult to visually discern where the proposed work would be focused. The model diagram presented as Figure 5 does little to "simply" present the interactions of the various processes associated with floodplain functionality, nor does it add value to the proposal. The authors would have been better off using that space to present substantive information (see below).**
Rating	**Above Average**

Approach

Comments	**The proposed approach comprises four major tasks, each of which is clearly defined and form a sequence. What is not clear from the proposal is the exact sequencing. The text states "Each of these steps builds one on the next; each requires completion of the proceeding step." Yet, the steps must overlap because the project is only two-years long whereas the steps add up to 64 months (not counting administrative oversight). This internal contradiction, along with the absence of a Gantt or similar chart, makes it difficult to fully understand how the project will be carried out.**
Rating	**Sufficient**

Feasibility

Comments	**Under each task, a series of subtasks have been delineated. However, the subtask descriptors are vague; they lack reference to specific pieces of information or specific methods. For instance, they state things like "conduct topographic evaluation" without specifying the nature of the data or "develop conceptual designs for increasing habitat through flow management..." or "quantitatively analyze...promising restoration concepts" without explaining how this will be done. Under the feasibility section, there is discussion of modeling and spatial analysis using existing data and hydraulic models. Some models and already developed data are spelled out, but in other cases the authors make statements like "other detailed local sources or less detailed but representative topographic data sets are expected to be available for many areas" leaving open the possibility that they will not be. While the authors are confident they will find sufficient data of high enough quality in three or more areas to carry out study objectives, they did not verify this information prior to submitting the proposal, making it difficult to judge whether they**

	will succeed in meeting their objectives. A glaring omission in the proposal has to do with climate change scenarios. Nowhere do the authors identify the scenarios they will use or how they will incorporate them into their models.
Rating	Inadequate

Budget

Comments	The budget seems reasonable to support the myriad tasks being described and their integration.
Rating	Superior

Relevance To CALFED

Comments	The authors make a strong case for addressing topics of high interest to CALFED, though as mentioned before, the climate change angle on this project is not adequately described. It is clear that the project should be of broad interest to CALFED. The proposed project also addressed the second tier of priorities. The products should be useful to resource managers and policy makers.
Rating	Above Average

Qualifications

Comments	The individuals assembled for the project appear to adequately cover the range of disciplines and expertise needed to carry out the work. Given the range of entities (public university, private consultants), the necessary resources should be available to the PIs.
Rating	Superior

Overall Evaluation Summary Rating

Comments	**It is clear that the authors have been working on the proposed topic for a long time and would bring a great deal of knowledge and expertise to the project. It is also clear that the project is timely and of interest to the funding agency. It is disappointing that the proposal is short on some of the details that would bolster one's confidence in the authors' ability to succeed. This is a highly complex project with many moving parts. Fuzzy presentation of specific methods, data sources, and timeline of stipulated tasks undermines the proposal.**
Rating	**Sufficient**

External Technical Review #2

Proposal Title: Floodplain Habitats for Key Species: Character, Extent, and Opportunities

Proposal Number: 0031

Proposal Applicant: Natural Heritage Institute

Purpose

Comments	**Our understanding of how floodplains contribute to healthy riverine ecosystems continues to increase at a rapid rate. In most all large North American rivers there has been a substantial loss of connectivity between the river channel and surrounding floodplain habitat over the last half-century. The impacts of this loss are now being manifested in the form of loss of various species, increases in frequency and severity of flooding, and increased pollution loading. In the Colorado River system, for instance, there are now major efforts to understand the importance of floodplain habitat to native fish recovery and to recreate access to historic floodplains. Thus, this proposal is timely and important to the long-term improvement of the Delta aquatic habitat. The background information shows the feasibility of the proposed study. The comparison of Figures 2 &3 showing historical and current floodplain areas is staggering in terms of the extent of ecosystem change and pretty much says it all in terms of the overwhelming justification for this project. I consider this project to have very high potential for providing useful knowledge about the Bay-Delta system as well as specific recommendations for increasing the number and area of floodplain habitats.**

Rating	**Superior**

Background

Comments	**The investigators, particularly Moyle (along with current work with Opperman), have provided a strong conceptual model for the project. The background information offers a solid basis for the proposed work. The authors have done a good job in reviewing and synthesizing information on floodplain systems as they relate to the current study.**
Rating	**Superior**

Approach

Comments	**The approach is well thought out and identifies parties responsible for completing each phase of the project. I think the mixture of agencies and personnel involved in the project makes it particularly strong. Given the recognized importance of floodplains in riverine ecosystems worldwide, this project has very strong potential for providing valuable products. The authors have provided reasonable plans for disseminating the information and have suitably addressed issues of data management.**
Rating	**Superior**

Feasibility

Comments	**I consider the likelihood of success to be very high. The principle investigators bring a strong mix of talent and experience to this project.**
Rating	**Superior**

Budget

Comments	**The budget and budget justification sheets make it clear what each aspect of the project will cost. Overall I think the budget is appropriate for the task**

	at hand. I am a bit concerned that Dr. Moyle, who is listed in both Task 2 and Task 6, and who brings by far the greatest amount of expertise to the tasks, isn't shown in the budget for Task 2, and somewhat minimally for Task 6. Relative to Task 2, he does have support for a post−doctoral scientist whom he will be supervising. Although I understand the need for coordination, it seems to me that the budget is overly weighted to administration and coordination (11%; Task 1).
Rating	**Above Average**

Relevance To CALFED

Comments	**The proposed study is very strong in terms of addressing CALFED priorities. The real strength of the study is its great potential for providing useful information to CALFED resource managers and policy makers.**
Rating	**Superior**

Qualifications

Comments	**The team assembled for this project provides a good mix of training and experience. Soderstrom seems to have widespread practical experience in this area, although is weak in terms of peer−reviewed publications. Monohan also has extensive practical experience in the project area, but again lacks peer−reviewed relevant publications. Both of these investigators are in non−academic positions where publishing is not as high a priority as in academia. Moyle is an internationally known fish ecologist with impeccable credentials who, in addition to bringing his extensive experience in aquatic ecology to this project, more than makes up for any lack of publishing experience of his co−investigators. Andrews has excellent experience and background in hydrology and modeling. She will be responsible for a major portion of the proposed work (tasks 3 &4).**

Rating	**Above Average**

Overall Evaluation Summary Rating

Comments	**Overall this is a well designed proposal that addresses a critical aspect of environmental health of the Bay-Delta ecosystem. The proposed work has a high potential of providing important information on floodplain habitats and, more importantly, has the potential for providing real management guidelines for improving floodplain quality and access to floodplains by native organisms. Money to support this proposal would be well spent.**
Rating	**Superior**

External Technical Review #3

Proposal Title: Floodplain Habitats for Key Species: Character, Extent, and Opportunities

Proposal Number: 0031

Proposal Applicant: Natural Heritage Institute

Purpose

Comments	**Purpose: The proposal seeks to determine the extent and hydrologic conditions of floodplain wetlands that support two key species, Sacramento splittail and Chinook salmon. Some field work, data "mining", GIS, hydraulic modeling and scientific experts (Floodplain Working Group) will be used to develop models that relate species habitat use with patterns (timing and frequency) of flooding. The proposed work will produce a spatially explicit database of the distribution of floodplain habitat in the region. The proposal also states it will evaluate the potential for habitat change as a result of sea level rise (SLR) and climate change and also opportunities for restoration. Sufficient**
Rating	**Sufficient**

Background

Comments	**Background: A conceptual model describing the linkages between floodplain hydrology, geomorphology, ecological response and benefits is shown in figure 5. Adequate background information is presented to understand the rationale for the work. Above Average**
Rating	**Above Average**

Approach

Comments	**Approach: The approach involves some field work (not clear where and how much), but mostly GIS to map the**

	floodplains and computer simulations of floodplain hydroperiod in response to different flooding regimes. Simulations also will be used to predict changes in floodplain habitat and flooding regimes in response to SLR and precipitation though “lip service” is given to how this will be done. For example, which IPCC emissions scenarios will be used in the simulations? Project tasks are clearly delineated and it is clear who is responsible for what. The deliverable of most value probably will be the GIS mapping of floodplain habitat. One peer reviewed paper (published on−line) is anticipated from the 580K project. Sufficient
Rating	Sufficient

Feasibility

Comments	Feasibility: The approach is feasible though vague in how/where field data will be collected, what existing datasets will be mined, which hydraulic model(s) will be used and how effects of climate change will be evaluated. Inadequate
Rating	Inadequate

Budget

Comments	Budget: The budget and how it will be allocated is clearly documented. The budget seems reasonable though I am not sure why “administration” (52K) and “documentation” (61K) costs are charged when indirect costs (22%) also are charged on the project. Also, it is not clear why no indirect costs are charged to the 250K subcontract to PWA. Sufficient
Rating	Sufficient

Relevance To CALFED

Comments	Relevance: The proposed work will provide information on Habitat Availability, specifically the distribution and extent of floodplain habitat for Sacramento splittail and Chinook salmon. It also addresses two

	PSP components “inventory of current floodplain habitat” and “development of spatially explicit databases to analyze existing habitats”. However, the proposal does not really address the effects of future climate and SLR change on these wetlands. Above Average
Rating	Above Average

Qualifications

Comments	Qualifications: The proposal contains a capable group of scientists and technical staff. Collectively, they are recipients of about $2,000,000 in recent funding from water resources agencies. Their track record for publishing research findings in peer−reviewed journals, though, is “thin”. Sufficient
Rating	Sufficient

Overall Evaluation Summary Rating

Comments	Overall rating: Overall, I rate this proposal as Sufficient because (1) the methods are not clearly explained, (2) future effects of climate change and SLR are not addressed, (3) the budget is fat with a lot of administrative costs and (4) the PI’s track record for publishing previous research is not that good.
Rating	Sufficient